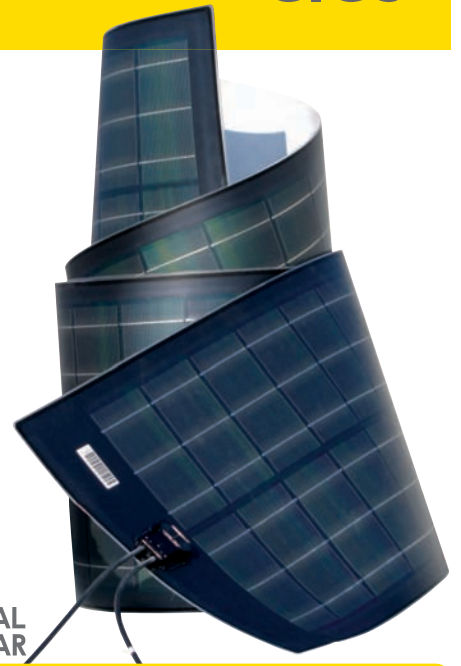


DESIGNED FOR ROOFS

- Thin Film CIGS high efficiency photovoltaic modules
- Availability of higher subsidy thanks to their innovative integration capability (where applicable, check with local utility)
- Fully integration into any roofing situations (flat, pitch, barrel vault, shed, etc.)
- NO fastening structures
- NO structural reinforcements
- NO perforation of the roofs
- NO hardware for the installation
- NO wind loads
- NO problems with static loads (modules weigh as much as 3.5 kg/m²)
- NO cracks, modules are not covered with glass on the front



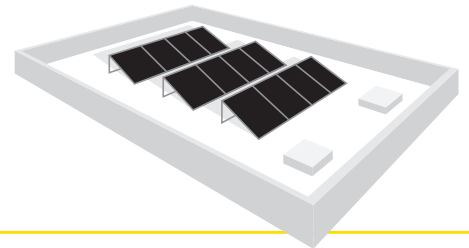
GLOBAL SOLAR

MORE ENERGY FROM EVERY NOVAGLASS ROOF

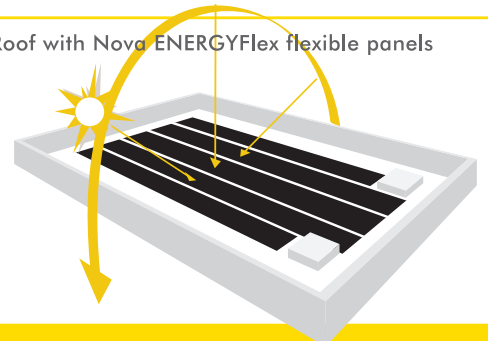
Thanks to the innovative CIGS technology higher power output may be achieved:

- 12% efficiency
- 50% more efficiency than any amorphous silicon flexible sheets
- A lot more efficiency than average rigid crystalline silicon modules
- More sun hours are useable for energy production, also when weather conditions are unstable
- Limited condition of shade effects thanks to diodes by-pass
- All the roofing surface can be exploited
- Modules are installed directly onto the waterproofing layers, without inclination and no supporting equipments
- 30% saving by installation costs
- The waterproofing membrane system is certified fire resistant

Roof with tilted solar panels



Roof with Nova ENERGYFlex flexible panels

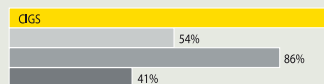


More solar surface to maximize the energy output = more energy from your roof

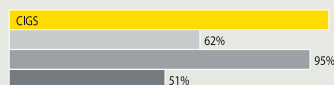
Location: Munich

Fixed Area Installation

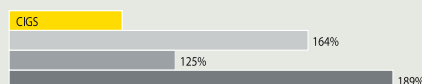
Power Generated (kW)



Energy Produced (kWh)



Cost of Installation & BOS



— c-Si (tilted)

— a-Si Flex

— CIGS (tubes)

— CIGS Flex



The system does not require any perforations or carrier structures. Rigid solar panels systems are average 20 kg/m² whereas Nova ENERGYFlex modules are as light as 3.5 kg/m².

Electrical Specifications*

Capacity rating	Pmax	100 W	90 W	82 W
Tolerance of Pmax	%	±7%	±7%	±7%
Module aperture area efficiency	%	12.7%	11.4%	10.4%
Rated voltage	Vmpp	17.8 V	16.5 V	15.5 V
Rated current	Imp	5.6 A	5.4 A	5.3 A
Open circuit voltage	Voc	23.3 V	22.0 V	20.9 V
Short circuit current	Isc	6.4 A	6.3 A	6.2 A

* Measured at (STC) Standard Test Conditions: 25°C, 1 kW/m² insolation, AM 1.5

Note 1: Average efficiency is calculated using the 0.79 m² aperture area of the module Note 2: Electrical parameter are +/-10%

Temperature Coefficients

TC P max	-0.43 %/°C
TC Vmpp	-0.38 %/°C
TC Voc	-0.33 %/°C
TC Isc	-0.03 %/°C

Low-Light Performance

Intensity	Relative Efficiency
1000 W/m ²	100%
500 W/m ²	99%
200 W/m ²	91%

Mechanical Specifications

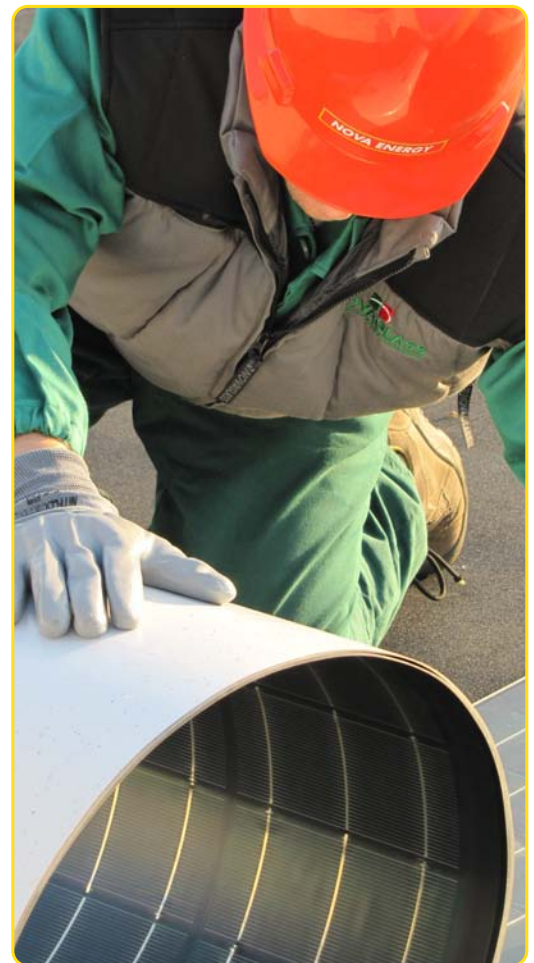
Dimensions	2017 x 495 x 3 mm (83 x 19.5 x 0.13 in)
Weight	3.3 Kg (nominal weight with adhesive), 3.3 kg/m ² (nominal weight with adhesive)
Hot Spot Protection	2 bypass diodes at each cell; 1 at junction box
Diode bypass	wired in parallel for every single solar cell
Front sheet	EFTE film, UV resistant
Solar Cells	36 CIGS cells (210x100 mm)
Adhesive	ADCO HelioBond™ PVA 600BT butyl mastic
Maximum Series Fuse Rating	10 Amp

Operating Conditions

Temperature Range	-40°C / +85°C
Maximum System Voltage	1000 V
Minimum Roof Slope	3°

Certifications and Warranty*

IEC 61646, IEC 61730 / UL 1703	TÜV Germany and US Laboratories
Material and workmanship	10 years
Power output	25 years (90% at 10 years, 80% at 25 years)



The manufacturer reserves the right to make changes and/or improvements at any time without notice and without incurring obligation. For more information and warranty conditions contact Novaglass S.p.A.

MORE ENERGY FROM EVERY NOVAGLASS ROOF